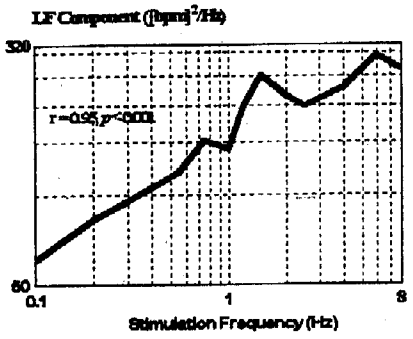


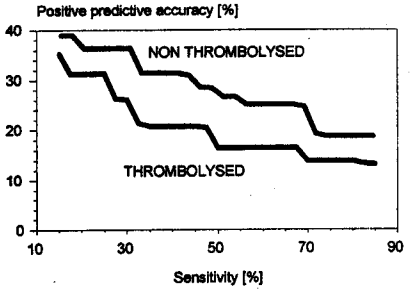
Our observation that there is a strong positive correlation between SS frequency and the LF component of HRV spectra suggests that analysis of spectral HRV can be used to assess sympathetic activity under certain circumstances.

8:45

731-2 Differences in Predictive Power of Heart Rate Variability in Thrombolysed and Non-Thrombolysed Survivors of Acute Myocardial Infarction

M. Malik, K. Hnatkova, A.J. Camm. *St. George's Hospital Medical School, London, England*

The power of reduced heart rate variability (HRV) to predict mortality after acute myocardial infarction (MI) has been established prior to the wide use of thrombolytic agents. Presently, only sparse data exist on the predictive power of HRV in MI survivors who did and did not receive thrombolytic treatment. This comparison was performed in patients of the Placebo limb of the EMIAT trial which investigated survivors of acute MI aged ≤ 75 years with left ventricular ejection fraction (LVEF) ≤ 40%. Baseline 24-hour Holter recordings were available in 592 patients (89 female, mean age 60.5 ± 9.3 years, 358 pts thrombolysed) of whom 79 (40 thrombolysed) died during a follow-up of maximum of 2 years. From the Holter recordings, HRV index values were computed. Positive predictive characteristics (PPC) were computed for the HRV based prediction of all cause mortality in thrombolysed and non-thrombolysed groups. Although reduced HRV provided stronger prediction of mortality in non-thrombolysed patients (positive predictive accuracies of 31% vs 21%, 26 vs 16% and 25% vs 16% at 40%, 50% and 60% sensitivity, respectively), the differences between the PPC curves were not statistically significant.



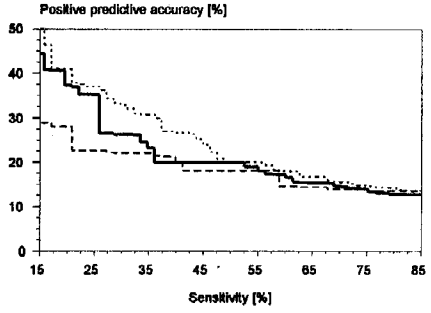
These results show that HRV remains a strong predictor of post-infarction mortality in patients receiving thrombolytic treatment. In thrombolysed patients with reduced LVEF, HRV still strongly predicts subsequent mortality.

9:00

731-3 Predictive Power of Increased Heart Rate and Depressed Heart Rate Variability in Post Infarction Patients with Reduced Left Ventricular Ejection Fraction

M. Malik, K. Hnatkova, A.J. Camm. *St. George's Hospital Medical School, London, England*

The power of increased heart rate and depressed heart rate variability (HRV) to predict subsequent mortality in post infarction patients aged ≤ 75 years with left ventricular ejection fraction ≤ 40% was examined in the data of the Placebo limb of the EMIAT trial. Baseline 24-hour Holter recordings were available in 592 patients (89 female, mean age 60.5 ± 9.3 years) of whom 79 died during a follow-up of maximum of 2 years. From the 24-hour Holter recordings, a mean normal-to-normal RR interval and the HRV triangular index values were computed for each patient. Complete positive predictive



characteristics were computed for (a) increased 24-hour mean heart rate, (b) depressed global 24-hour heart rate variability, and (c) a multivariate combination of both factors predicting subsequent all cause mortality.

The results (Fig.: full line = mean RR interval, dashed line = HRV, dotted line = combination of both factors) show that in patients with reduced LVEF, increased 24-hour mean heart rate is at least an equally good predictor of mortality as depressed 24-hour heart rate variability (positive predictive accuracy of 20.0% and 19.9% at 40% sensitivity). Combination of both factors leads to a further slight improvement in the predictive power (PPA of 26.7% at 40% sensitivity).

9:15

731-4 Autonomic Nervous System Dysfunction but Not Dispersion of Ventricular Repolarization has Prognostic Implication in Chronic Heart Failure

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Markers of autonomic dysfunction and dispersion of repolarization have been recently proposed for risk stratification of patients (pts) with ischemic heart disease. However their prognostic value in chronic heart failure (CHF) is still uncertain. In 165 CHF pts in sinus rhythm (age 52 ± 5, NYHA cl. II–IV, LVEF 23 ± 7, stable oral therapy), consecutively referred to our Heart Failure Unit, we assessed baroreflex sensitivity (BRS), heart rate variability (HRV by Total Variance and rMSSD) and QT and QTc dispersion (QT max – QT min in ≥9 ECG measurable leads). BRS and HRV were successfully measured in 100% pts, while 30 pts were excluded from QT analysis due to flat T waves (n = 18) and complete bundle branch blocks (n = 12). Afar a follow-up of 15 ± 9 months, 47 cardiac deaths and 30 urgent heart transplants occurred. BRS and HRV but not QT dispersion were significantly altered in deceased patients (BRS = 2.7 ± 3 vs 4.73 ms/mmHg, Total Variance = 415 ± 440 vs 755 ± 710 ms^2, rMSSD 9.6 ± 6 vs 12.7 ± 8 ms, all $p < 0.01$; QT dispersion 81 ± 27 vs 81 ± 28 ms). Using cut off values derived from the lowest 25th percentile, autonomic markers identified pts at risk (BRS < 1 ms/mmHg = RR 2.1 (1.0–6.1), rMSSD < 6 ms = 3.1 (1.2–8.1) while QT dispersion did not. Addition of QT dispersion >100 ms did not improve the power of autonomic nervous system markers in identifying pts at risk. Similar data were obtained in the prediction of arrhythmic deaths.

These results show that autonomic markers are useful for the identification of CHF patients at higher risk. Conversely, the evaluation of the pattern of ventricular repolarization can not be effectively measured in all CHF patients and it does not provide prognostic information.

9:30

731-5 Heart Rate Variability Predicts Long-term Mortality in Chronic Coronary Disease

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Decreased heart rate variability (HRV) has been shown to predict mortality following acute MI. To assess the ability of HRV to predict all-cause mortality in chronic coronary disease, we prospectively studied 250 patients with cath proven CAD who were treated medically (mean age 62, mean EF 49%, female 30%, history of MI 53%, diabetes 27%). Mean follow-up was 2.2 years. There were 43 deaths. We calculated the following time domain measures of HRV from 24 hour Holters: SDNN (SD of normal RR intervals); ASDNN5 (mean of SD of normal RR intervals in 5 minute segments); SDANN5 (SD of mean normal RR intervals in 5 minute segments).

Cox regression analysis revealed significant associations between HRV and survival with the following relative risks for 25th vs 75th percentiles – SDNN: 1.8; ASDNN5: 2.6 and SDANN5: 1.7. After adjusting for major demographic and prognostic factors, decreased measures of HRV predicted a 1.6